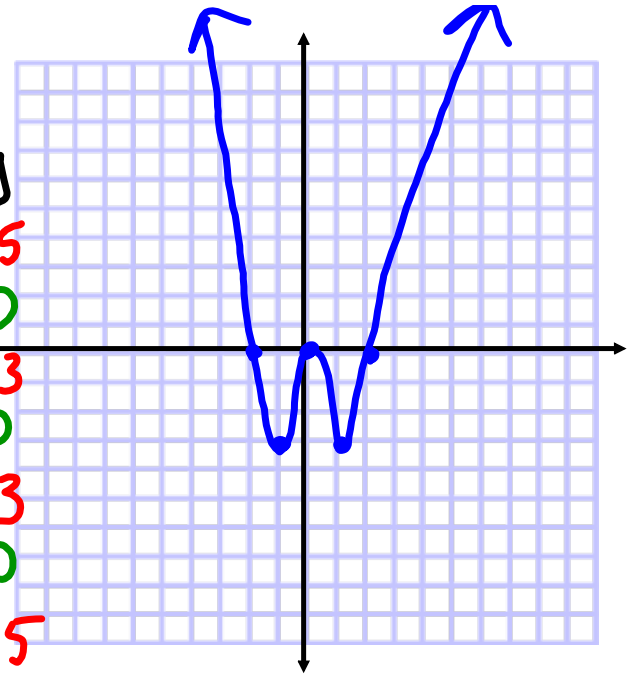
Graph the function below.

$f(x) = -x^4 - 4x^2$

| x | y |
|---|---|
| -3 | $(-3)^4 - 4(-3)^2 = 81 - 36$ → 45 |
| -2 | $(-2)^4 - 4(-2)^2 = 16 - 16$ → 0 |
| -1 | $(-1)^4 - 4(-1)^2 = 1 - 4$ → -3 |
| 0 | $(0)^4 - 4(0)^2 = 0 - 0$ → 0 |
| 1 | $(1)^4 - 4(1)^2 = 1 - 4$ → -3 |
| 2 | $(2)^4 - 4(2)^2 = 16 - 16$ → 0 |
| 3 | $(3)^4 - 4(3)^2 = 81 - 36$ → 45 |



What is the shape of the graph? W-shaped

How many U-turns are there? 3

Is the degree even or odd?

Is the leading coefficient pos. or neg.?

Describe the end behavior.

Left

as $x \to -\infty$, $f(x) \to \infty$

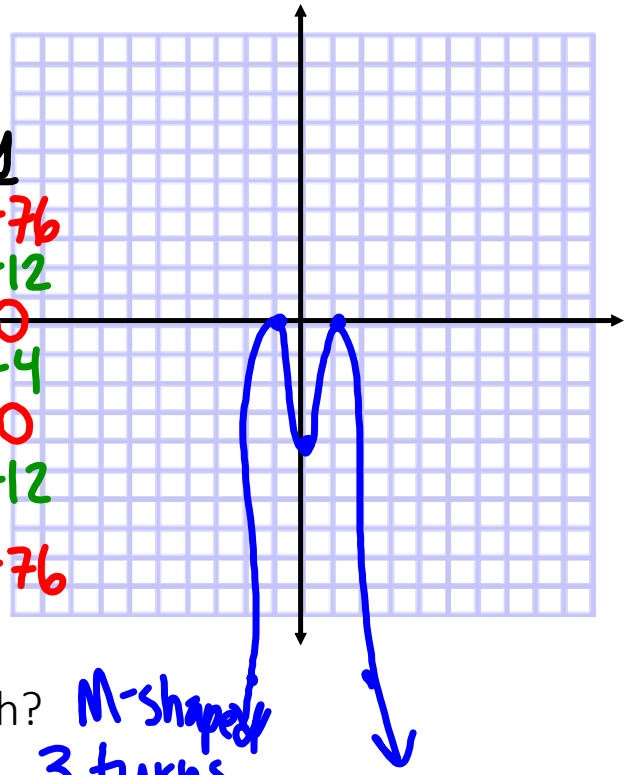
Right

as $x \to \infty$ $f(x) \to \infty$

Graph the function below.

$f(x) = -x^4 + x^3 + 4x^2 - 4$

| x | y |
|---|---|
| -3 | $-(-3)^4+(-3)^3+4(-3)^2-4$ = -76 |
| -2 | $-(-2)^4+(-2)^3+4(-2)^2-4$ = -12 |
| -1 | $-(-1)^4+(-1)^3+4(-1)^2-4$ = 0 |
| 0 | $-(0)^4+(0)^3+4(0)^2-4$ = -4 |
| 1 | $-(1)^4+(1)^3+4(1)^2-4$ = 0 |
| 2 | $-(2)^4+(2)^3+4(2)^2-4$ = -12 |
| 3 | $-(3)^4+(3)^3+4(3)^2-4$ = -76 |



What is the shape of the graph? M-shaped

How many U-turns are there? 3 turns

Is the degree even or odd?

Is the leading coefficient pos. or neg.?

Describe the end behavior.

Left

as $x \to -\infty$, $f(x) \to -\infty$

Right

as $x \to \infty$, $f(x) \to -\infty$